

Serial No.: 10/769,777  
Docket No.: 101-1015  
Amendment dated August 2, 2007  
Reply to the Office Action of April 18, 2007

## **REMARKS**

### **Introduction**

Applicant notes with appreciation the Examiner's indication that each of the references cited in the Information Disclosure Statement of February 3, 2004 have been considered.

Upon entry of the foregoing amendment, claims 1-51 are pending in the application. Claims 1, 8, 25-27, and 51 have been amended. No new matter is being presented. In view of the following remarks, reconsideration and allowance of all the pending claims are requested.

### **Objections**

#### **Specification**

The Examiner has objected to the specification due to informalities. Applicants respectfully point out that the provided replacement paragraph in the specification overcome the objections to the specification. Accordingly, Applicants respectfully requests withdrawal of the objection to the specification.

#### **Claims**

Claim 8 is objected to under 37 CFR 1.75(a), as failing to particularly point out and distinctly claim the subject matter which application regards as his invention or discovery. Regarding the objections to claim 8, Applicants respectfully assert that amendments have been made in accordance with the Office Action's suggested changes to claim 8. Accordingly, Applicants respectfully request withdrawal of the objection to claims 8.

### **Rejection under 35 USC § 102**

Claims 1, 10, 13, 25, 27, 36, 39 and 51 have been rejected under 35 U.S.C. §102(b) as being anticipated by "Robust quadtree-based disparity estimation...", SPIE article to Mancini et al. (hereinafter "Mancini et al.").

Independent claims 1, 25, and 27, as amended, recite "wherein the determining whether to split the image block into sub blocks is performed by determining whether the image block has been split in a preceding image frame at the same location." Independent claim 51, as

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amended, recites determining “whether to split the image block by determining whether the image block has been split in a preceding image frame at the same location.” Mancini et al. shows, in section 6.5, problematic blocks being identified and split into four equal-sized sub blocks, while sub blocks that still fall on object boundaries can undergo further splitting. Also, section 6.5.1 of Mancini et al. suggests a decision making process to determine whether block  $B_{ij}$  requires splitting in a three step process. However, Applicants respectfully assert that Mancini et al. does not teach referring to whether a block placed at the same location in a preceding image frame as the current block has been split. Thus, Applicants respectfully assert that Mancini et al. does not disclose the steps of determining whether to split the blocks is performed by determining whether the image block has been split in a preceding image frame at the same location as recited in amended independent claims 1, 25, 27, and 51, and hence also recited in dependent claims 2-13, and 28-41.

### **Rejection under 35 USC § 103**

Claims 2, 3, 11, 12, 14-16, 19, 22, 26, 28, 29, 37, 38, 40-42, 45 and 48 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mancini et al. in view of U.S. Patent No. 4,785,349 to Keith et al. (hereinafter “Keith et al.”).

Applicants respectfully note that in a telephone interview with Examiner K. Fujita on May 20, 2007, the inadvertent omission of dependent claim 37 was discussed. Examiner Fujita confirmed that dependent claim 37, which depends upon dependent claim 28 and has similar subject matter as dependent claim 38, should be included in this rejection in the Office Action. In order to expedite prosecution of this application, Applicants respectfully point out that claim 37 will be included to be addressed in the response to the Office Action.

Claims 2, 16, 26, 28, and 42 recite determining whether to split a macro block into sub blocks, respectively, is performed by determining whether the macro block has been split in a preceding image frame at the same location. Claims 3, 16, 26, 29, and 42 recite determining whether to split a sub block into smaller sub blocks, respectively, is performed by determining whether the sub block has been split in a preceding image frame at the same location.

Page 7 of the Office Action states that Keith et al., at column 25, line 55, shows a “region of a previous frame may be found that corresponds fairly well to a region being coded in a current frame.” Also, the Office Action states that Keith et al., at column 27, line 16, shows the

target being "checked for minimum size. If the target is larger than the minimum size, it is split." The Office Action alleges that it would be obvious for one of ordinary skill in the art for the split condition of Mancini et al. to be determined using the interframe coding taught by Keith et al. for one need only code the differences rather than the absolute values. Applicants respectfully assert that column 25, lines 50-68, of Keith et al. suggest that inter-frame coding is used to take advantage of correlation or redundancy which exists between frames in a motion video sequence. Keith et al. suggests that one need only code the differences rather than the absolute values, as these differences tend to be small numbers that can be encoded with fewer bits. However, Applicants respectfully assert that Keith et al. does not disclose determining whether or not the preceding image frame has been split. Applicants respectfully assert that while Keith et al. suggests the correlation or redundancy existing between frames, Keith et al. does not necessarily disclose determination of the preceding image frame being split. Further, column 27, lines 6-19 of Keith et al. suggest that a mean square difference (MSD) value is calculated when searching for a region "C" of the previous frame which most closely matches the target region "T" of the current frame. The MSD value is compared against a threshold. However, Applicants respectfully assert that Mancini et al. suggests an average absolute value of the displaced pixel difference (DPD). Applicants respectfully assert that the different calculation methods suggested by Mancini et al. and Keith et al. result in an impermissible combination of references due to the different image frame comparison techniques being employed. Accordingly, Applicants respectfully assert that Mancini et al. and Keith et al. do not disclose determining whether to split a macro block into sub blocks, respectively, is performed by determining whether the macro block has been split in a preceding image frame at the same location as recited in dependent claims 2, 3, 26, 28, 29, and 42.

Claims 4, 6, 30, and 32 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mancini et al. in view of U.S. Patent No. 5,208,673 to Boyce (hereinafter "Boyce"). Applicant respectfully asserts that Mancini et al. fails to disclose the combination of features recited by amended independent claims 1 and 27, and hence also recited in dependent claims 4, 6, 30, and 32 which depend therefrom.

Claims 5, 7, 17, 18, 20, 21, 23, 24, 31, 33, 43, 44, 46, 47, 49, and 50 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mancini et al. in view of Keith et al. as applied to claims 2, 3, 11, 12, 14-16, 19, 22, 26, 28, 29, 38, 40-42, 45 and 48 above, and further

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in view of Boyce. Applicants respectfully assert that column 27, lines 6-19, of Keith et al. suggests that a mean square difference (MSD) value is calculated when searching for a region "C" of the previous frame which most closely matches the target region "T" of the current frame. The MSD value is compared against a threshold. However, Applicants respectfully assert that Mancini et al. suggests an average absolute value of the displaced pixel difference (DPD). Applicants respectfully assert that the different calculation methods shown in Mancini et al. and Keith et al. result in an impermissible combination of references due to the different image frame comparison techniques being employed by Mancini et al. and Keith et al. Accordingly, Applicants respectfully assert that Mancini et al., Keith et al., and Boyce do not disclose determining the possibility of splitting the macro block by determining whether the ratio of mean absolute difference (MAD) to minimum MAD of a sub block in a macro block is greater than a threshold value for determining the possibility of splitting the block. Also, Applicant respectfully asserts that Mancini et al. fails to disclose the combination of features recited by amended independent claims 1, 16, 27, and 42, and hence also recited in dependent claims 5, 7, 17, 18, 20, 21, 23, 24, 31, 33, 43, 44, 46, 47, 49, and 50, which depend therefrom.

Claims 8, 9, 34 and 35 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mancini et al. in view of Boyce as applied to claims 4, 6, 30, and 32 above, and further in view of Keith et al. Claims 8 and 34 recite determining whether the ratio of maximum to minimum MAD is between the threshold value for determining the possibility of splitting the macro block and the threshold value for determining whether to split the macro block. Claims 9 and 35 recite determining whether the ratio of maximum to minimum MAD is between the threshold value for determining the possibility of splitting the sub block and the threshold value for determining whether to split the sub block. Applicants respectfully assert that Mancini et al., Boyce, and Keith et al. fail to disclose the ratio of the maximum to minimum MAD being between the threshold values for determining the possibility and whether to split the macro block or the sub block. Thus, Applicants respectfully assert that dependent claims 8, 9, 34, and 35, are allowable over Mancini et al., Boyce, and Keith et al., and withdrawal of this rejection and allowance of these claims is earnestly solicited. If the Examiner continues to maintain this rejection, Applicants respectfully request that the Examiner specifically point out the relationship between the aforementioned ratio and the two threshold values.

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Claims 30-35, 43, 44, 46, 47, 49 and 50 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Mancini et al., Keith et al. and Boyce as applied to claims 4, 6, 17, and 18 above, and further in view of US Patent No. to Sethuramen et al. Applicants respectfully point out that the claims in this rejection have all been rejected in earlier rejection to Mancini et al., Keith et al., and Boyce. Applicants respectfully note that in a telephone interview on May 21, 2007, Examiner K. Fujita confirmed that this rejection was inadvertently included in the Office Action and should have been omitted from the Office Action. Accordingly, Applicants respectfully submit that this rejection be withdrawn by the Examiner.

Thus, Applicant respectfully asserts that the rejection of claims 1, 10, 13, 25, 27, 36, 39 and 51 under 35 U.S.C. §102(b) as being anticipated by "Robust quadtree-based disparity estimation..." SPIE article to Mancini et al., the rejection of claims 2, 3, 11, 12, 14-16, 19, 22, 26, 28, 29, 37, 38, 40-42, 45 and 48 under 35 U.S.C. §103(a) as being unpatentable over Mancini et al. in view of Keith et al., the rejection of claims 4, 6, 30, and 32 under 35 U.S.C. §103(a) as being unpatentable over Mancini et al. in view Boyce, and the rejection of claims 5, 7, 17, 18, 20, 21, 23, 24, 31, 33, 43, 44, 46, 47, 49, and 50 under 35 U.S.C. §103(a) as being unpatentable over Mancini et al. in view of Keith et al. as applied to claims 2, 3, 11, 12, 14-16, 19, 22, 26, 28, 29, 38, 40-42, 45 and 48 above, and further in view of Boyce, the rejection of claims 8, 9, 34 and 35 under 35 U.S.C. §103(a) as being unpatentable over Mancini et al. in view of Boyce as applied to claims 4, 6, 30, and 32 above, and further in view of Keith et al., must be withdrawn.

### **New Claims**

New claims 52-57 have been added. Applicant respectfully submits that support for the newly added claims 52-57 can be found in FIGs. 2-3 and corresponding portions of the detailed description. Accordingly, it is respectfully submitted that new claims 52-57 do not present new matter, and are allowable over the prior art of record, and allowance of these claims is earnestly solicited.

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**Conclusion**

It is respectfully submitted that a full and complete response has been made to the outstanding Office Action and, as such, there being no other objections or rejections, this application is in condition for allowance, and a notice to this effect is earnestly solicited.


If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided below.

If any further fees are required in connection with the filing of this amendment, please charge the same to our Deposit Account No. 502827.

Respectfully submitted,

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